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LETTERS TO THE EDITOR

Measurement of Antistreptokinase Antibodies

The average level of antistreptokinase antibodies in a given population varies and depends on the local incidence of streptococcal infections. In a study of 120 patients and hospital employees taken at random, we found 5 (4%) with high antistreptokinase antibodies necessitating between 180 and 400 IU of streptokinase/ml of plasma to achieve plasma clot lysis within 10 minutes (1). If such patients were to undergo thrombolytic therapy with streptokinase, they would need 600,000 to 1.5 million IU of streptokinase just to overcome the inhibitory effect of the antistreptokinase antibodies.

Lew et al. (2) recently reported a case of inferoposterior myocardial infarction in which a high titer of antistreptokinase antibodies resulted in the failure of a coronary thrombus to lyse. In 1981, we observed a similar case (3). The patient was a 62 year old woman presenting with a 24 hour history of increasing chest pain. At the time of admission, there were signs of an acute anterior myocardial infarction, and coronary angiography showed complete occlusion of the left anterior descending coronary artery. Streptokinase (500,000 IU) was infused directly into the left coronary artery over a 3 hour period. The procedure was then abandoned because no signs of reopening had occurred. Five hours later, the results of the antibody determination performed by the technique of Johnson et al. (4) became known. The patient's antistreptokinase titer was found to be 250 IU/ml.

Antibodies against thrombolytic agents should be searched for routinely in patients undergoing thrombolytic therapy in acute myocardial infarction. Results should be available as soon as possible to allow adjustment of the amount of streptokinase infused.

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References

1. Bachmann F. Development of antibodies against perorally and rectally administered streptokinase in man. J Lab Clin Med 1968;72:228–38.
2. Lew AS, Neer T, Rodriguez L, Geft IL, Shah PK, Ganz W. Clinical failure of streptokinase due to an unsuspected high titer of antistreptokinase antibody. J Am Coll Cardiol 1984;4:183–5.
3. Sigwart U, Grbic M, Goy J-J, et al. Thrombolyse intra-coronarienne comme traitement de l'infarctus en constitution. Schweiz Med Wochenschr 1983;113:1666–70.
4. Johnson AJ, Fletcher AP, McCarthy WR, Tillett WS. The intravascular use of streptokinase. Ann NY Acad Sci 1957;68:201.

Reply

Sigwart et al. recommended routine measurement of the antistreptokinase antibody titer in patients with acute myocardial infarction undergoing streptokinase thrombolytic therapy. We agree that this would facilitate individualization of dosage and rapid neutralization of antistreptokinase antibody but we consider that the potential benefits of adopting such a recommendation are currently limited because the available accurate assays for antistreptokinase titer cannot usually provide a result rapidly enough to guide streptokinase dosage during the critical 4 to 6 hour time interval after the onset of infarction. A second limitation of the recommendation of Sigwart et al. is that in most patients, the antistreptokinase titer is low relative to the dose of streptokinase and only occasional patients have a moderate to high antistreptokinase titer which interferes with fibrinolysis.

In order to identify patients in whom delayed or failed reperfusion is likely to be due to a high antistreptokinase titer, we routinely measure serum fibrinogen immediately after administration of streptokinase. In our experience, serum fibrinogen falls to less than 50 mg/100 ml in most patients by the end of a 30 minute intravenous infusion of 750,000 IU of streptokinase and in 12 such patients that we have treated, no antistreptokinase antibodies were detected by counterelectrophoresis. In three patients in whom reperfusion had not occurred within 60 minutes of streptokinase administration and in whom the poststreptokinase serum fibrinogen levels were 285, 175 and 92 mg/100 ml, respectively, the whole body antistreptokinase titer was between 0.5 and 1.5 million IU. Reperfusion followed a second infusion of streptokinase in the latter two of these three patients.

Thus, our experience suggests that a high antistreptokinase titer may either completely prevent or significantly inhibit thrombolysis. Since the degree of poststreptokinase serum fibrinogen depletion can provide only a delayed and qualitative assessment of the antistreptokinase titer, a rapid antistreptokinase assay that is accurate to within 100,000 to 200,000 IU would, therefore, be a superior measurement which would facilitate an early and definitive adjustment of the dose of streptokinase. Even though antistreptokinase antibodies seem to be clinically important in only a few patients, we agree with Sigwart et al. that the tailoring of the streptokinase dosage would be of clinical benefit and, therefore, we encourage efforts to develop and test the utility of a rapid and accurate antistreptokinase assay.

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Spontaneous Echocardiographic Contrast and Hepatic Congestion

Hjemdahl-Monsen and colleagues (1) have reported spontaneous echocardiographic contrast in the inferior vena cava in a patient with constrictive pericarditis. They suggested that low flow state enabled the red blood cell aggregates to form and yield spontaneous contrast. We have observed the occurrence of spontaneous contrast